

ABSTRACT OF THE DISCLOSURE

A method of expressing a protein having an unnatural amino acid integrated thereinto characterized by comprising expressing (A) a mutant tyrosyl tRNA synthase which is a mutant of *Escherichia coli*-origin tyrosyl tRNA synthase and has an elevated specificity for a unnatural tyrosine derivative compared with the specificity for tyrosine, (B) a suppressor tRNA originating in an eubacterium belonging to the genus *Bacillus*, *Mycoplasma* or *Staphylococcus* which is capable of binding to the above tyrosine derivative in the presence of the above mutant TyrRS, and (C) a desired protein gene having a nonsense mutation at a desired site in animal cells to thereby incorporate the above tyrosine derivative into the nonsense mutation site in the above protein.